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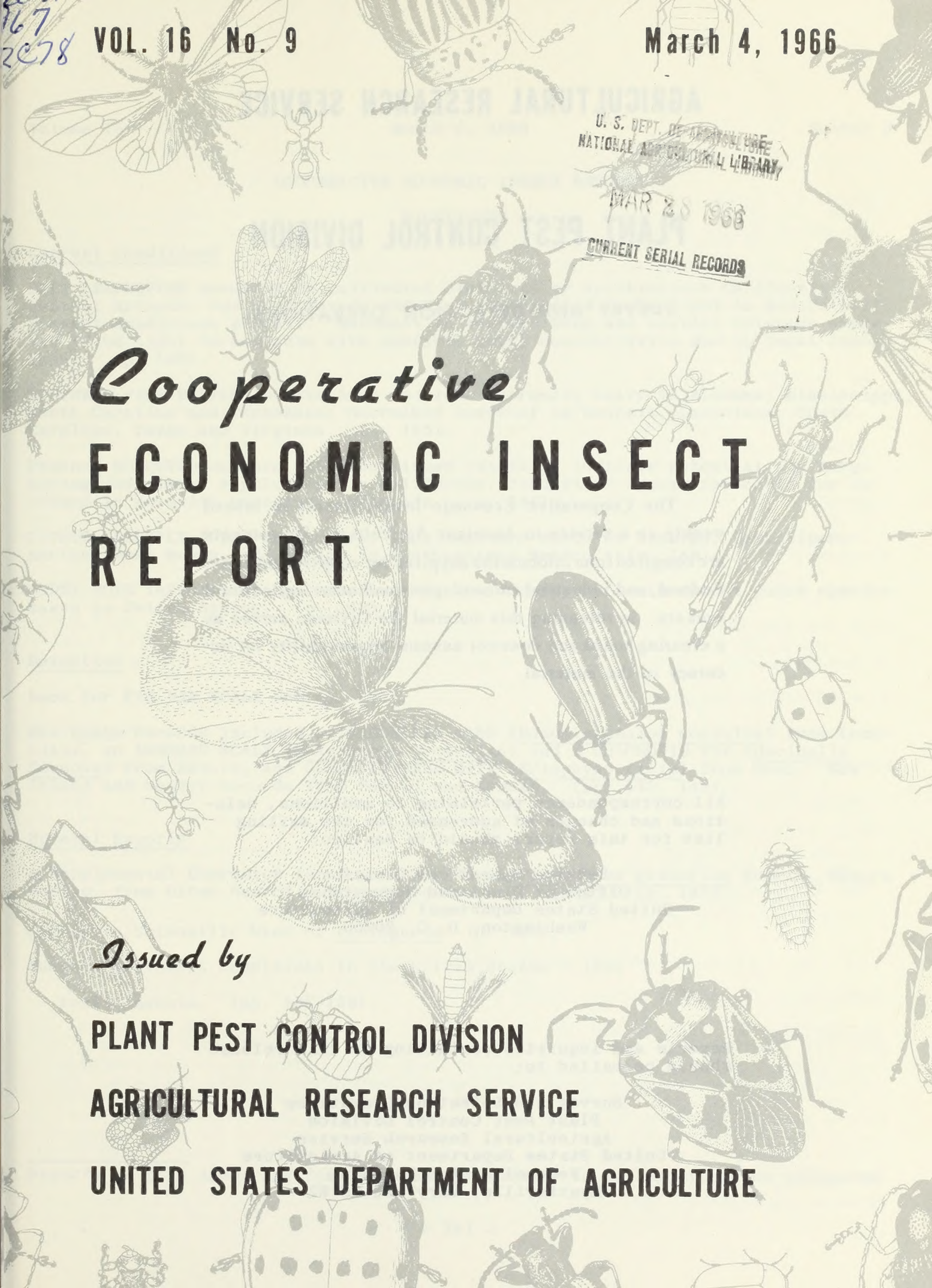

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 March 4, 1966 Number 9

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

BEET LEAFHOPPER movement to cultivated districts of southwestern California, central Arizona, southern Nevada and Utah is expected to be light to moderate if present conditions prevail. Movement to eastern Utah and western Colorado expected to be light to moderate with possible heavy concentration due to local topography. (p. 143).

SOUTHERN PINE BEETLE infestations continue extremely heavy in Alabama, Mississippi, North Carolina and Tennessee; decreased somewhat in Georgia, Louisiana, South Carolina, Texas and Virginia. (p. 145).

Present MOSQUITO numbers, with continued rainfall, indicate potential for large spring and summer populations in California; conditions appear favorable for increase in mosquito breeding in Florida. (p. 146).

CITRUS BLACKFLY found on property 11 kilometers north of Hidalgo, Tamaulipas; northernmost known infestation in northeastern Mexico. (p. 148).

GYPSY MOTH infestation near Manahawkin, New Jersey, is southernmost point species taken in United States. (p. 148).

Detection

Look for FIG WAX SCALE Now. (p. 149).

New State records included a TRIGONALID WASP (*Poecilogonalos costalis*) from Louisiana, an ARMORED SCALE (*Melanaspis bromeliae*) and a CHLOROPID FLY (*Oscinella formosa*) from Hawaii, and GRAPE ERINEUM MITE (*Eriophyes vitis*) from Ohio. New island and county records from Hawaii and Kansas. (pp. 148, 149).

Special Reports

A Supplemental Character for Separating Adult *Trogoderma granarium* Everts, Khapra Beetle, from Other Nearctic *Trogoderma* Species. (Key). (p. 147).

Change in Scientific Name of *Protoparce* (p. 150).

Summary of Insect Conditions in the United States - 1965

Fruit Insects. (pp. 152-166).

Reports in this issue are for week ending February 25 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING FEBRUARY 28

HIGHLIGHTS: (1) Continued wet South and East. (2) Warming trend North.

TEMPERATURE: The cold Arctic air that had settled over most of the Nation the previous week was still entrenched at the beginning of the period. However, the much below normal temperatures in the northern States from the eastern Rockies to the Atlantic modified by midweek resulting in near normal weekly averages. The warming trend was less pronounced in the South. Temperatures averaged much below normal in most of Texas and Louisiana; the lower Rio Grande Valley was especially cold. The Southeast was also slightly below normal. Most of the West experienced little temperature change from the previous week with average temperatures mostly near normal.

Weather continued on page 166.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE*

Beet Leafhopper Survey in Desert Areas of Southern Utah and Nevada, Southwestern California and Central Arizona

Surveys were conducted for beet leafhopper (*Circulifer tenellus*) during the period January 31 to February 12, 1966. If present *conditions prevail*, spring movement from the southern desert breeding grounds to cultivated districts of southwestern California, central Arizona, southern Nevada and Utah, is expected to be *light to moderate*. Movement to eastern Utah and western Colorado is expected to be *light to moderate* with possible heavy leafhopper concentration due to local *topography*. *The southern* desert breeding grounds, comprising approximately 50,000 square miles of potential weed host area, were considered to have an estimated 65 percent host plant cover at time of survey. Above-average fall and winter rains resulted in widespread weed host development over much of the breeding grounds in Arizona and California and in some areas of southern Nevada and Utah. Storms during the second week of February should help sustain annual weed hosts and may cause additional plants to germinate. The average number of beet leafhoppers found in areas where host plants were present was 0.013 per square foot in 1966 compared with 0.04 in 1965, 0.15 in 1964, 0.02 in 1963, 0.12 in 1962 and 0.02 in 1961. It is estimated from data collected during this survey that overwintering beet leafhoppers in the southern desert breeding grounds total 6.5 billion in 1966 compared with 12 billion in 1965, 112 billion in 1964, 7.7 billion in 1963, 6.1 billion in 1962 and 6.3 billion in 1961. This report covers only the beet leafhopper situation in the area surveyed. It does not have reference to populations that may have overwintered in local breeding areas in northern and eastern Utah or in western Colorado or western Nevada. (PPC, West. Reg.).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - ARKANSAS - Counts very low in northeast area; numbers *below those* in *January* before occurrence of extended cold weather. Current low temperatures apparently preventing buildup. (Ark. Ins. Sur.).

SMALL GRAINS

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - FLORIDA - Increasing on rye at Gainesville, Alachua *County; 100 sweeps yielded* 50 specimens, mostly nymphs. (Mead). ARKANSAS - Numbers very low in northeast; below January levels before extended cold weather. Current low temperatures apparently preventing buildup. (Ark. Ins. Sur.).

LEAFHOPPERS - FLORIDA - Increased slowly on rye during past 2 weeks at Gainesville, Alachua County; 100 sweeps yielded 13 adult *Macrosteles fascifrons*, 8 adults of *Balclutha* spp. and 14 adults of mixture of *Graminella* spp., *Deltocephalus* spp., *Stirellus* spp. and *Exitianus* spp. (Mead).

THRIPS (*Frankliniella* spp.) - FLORIDA - Increasing on rye at Gainesville, Alachua County; *100 sweeps yielded* 30 specimens. (Mead).

TURF, PASTURES, RANGELAND

BERMUDAGRASS MITE (*Aceria neocynodonis*) - CALIFORNIA - Heavy on Bermuda grass locally in *Huntington Beach, Orange County*. (Cal. Coop. Rpt.).

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*NOTE: This section was entitled "Special Migratory Insects" in last week's report. On further consideration with respect to the various species that will be included in this special section, a broader heading has been selected. This will permit inclusion of insects which are not considered migratory in a strict sense.

FORAGE LEGUMES

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - None found in Dona Ana County alfalfa. (Nielsen, Elson). Very light on alfalfa in Artesia area, Eddy County, (Kloepfer), and Belen area, Valencia County, (Heninger). ARKANSAS - Very low in northeast; below January levels before extended cold weather. Current low temperatures apparently preventing buildup. (Ark. Ins. Sur.).

LEAFHOPPERS - FLORIDA - Generally light on blue lupine at Gainesville, Alachua County; 100 sweeps yielded 3 Cuerna costalis adults, 3 Macrosteles fascifrons adults and 1 Aceratagallia sanguinolenta adult. (Mead).

CLOVER LEAF WEEVIL (Hypera punctata) - CALIFORNIA - Larvae light in alfalfa in Fresno, and Hypera sp. light on same host locally in Firebaugh, Fresno County. (Cal. Coop. Rpt.).

POTATOES, TOMATOES, PEPPERS

GREEN PEACH APHID (Myzus persicae) - FLORIDA - Developing on potatoes at Homestead, Dade County. Det. by D. O. Wolfenbarger. (Fla. Coop. Sur.).

COLE CROPS

GREEN PEACH APHID (Myzus persicae) - CALIFORNIA - Light on 2 acres of rutabagas in Chino, San Bernardino County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

OYSTERSHELL SCALE (Lepidosaphes ulmi) - CALIFORNIA - This species and Aspidiotus perniciosus medium on abandoned pear trees locally in Lompoc, Santa Barbara County. (Cal. Coop. Rpt.).

For Other Fruit Insects, see Federal-State Plant Protection Programs, page 148.

CITRUS

SCALE INSECTS - FLORIDA - Inspection of 200,000 sweet orange plants revealed Adonidiella citrina on 75 percent, Ceroplastes floridensis on 30 percent, and Saissetia oleae on 10 percent in citrus nursery in Dundee, Polk County. (Eisenschenk).

SPIDER MITES - FLORIDA - General with severe damage on more than 11,000 sweet orange plants in nursery at Lake Alfred, Polk County. Entire nursery showing effects of Panonychus citri and Eutetranychus banksi; leaves becoming gray and dropping. (Eisenschenk).

For Other Citrus Insects, see Federal-State Plant Protection Programs, page 148.

GENERAL VEGETABLES

THRIPS - NEW MEXICO - Very light in southern Dana Ana County; averaged less than 1 per 3 onion plants in fields checked. (Elson, Nielsen).

ORNAMENTALS

A TWIG BORER (Amphicerus cornutus) - CALIFORNIA - Adults medium on Pittosporum tobira shrubs in Sepulveda, Los Angeles County. (Cal. Coop. Rpt.).

A SAP BEETLE (Conotelus punctatus) - FLORIDA - Infesting gardenia blossoms at Homestead, Dade County. Species ordinarily feeds on pollen, but some bud damage may occur. (Daigle).

PINE WEBWORM (Tetralopha robustella) - FLORIDA - Larvae infested 10 percent of 1,500 plants of sand pine (Pinus clausa) at nursery in Plant City, Hillsborough County; controls requested. (Herrmann).

COOLEY SPRUCE GALL APHID (Chermes cooleyi)- MARYLAND - A problem on Norway spruce in 2 large Christmas tree plantations near Accident, Garrett County. (U. Md., Ent. Dept.).

MELON APHID (Aphis gossypii) - CALIFORNIA - Heavy populations developing on crassula nursery stock in Santa Clara, Santa Clara County. (Cal. Coop. Rpt.).

SOFT SCALES - CALIFORNIA - Saissetia oleae and Parlatoria oleae locally heavy on cotoneaster in Marysville, Yuba County. Saissetia sp. locally heavy on Natal-plum (Carissa grandiflora) in Brawley, Imperial County. This species cannot be separated from S. oleae, but infests different hosts. Parasite preference also indicates difference. Saissetia sp. normally infests fig in desert areas. (Cal. Coop. Rpt.).

AN ARMORED SCALE (Pseudaonidia paeoniae) - ALABAMA - Species infesting greenhouse camellias in Jefferson County, as reported in CEIR 16(8):120, definitely identified as this species by H. H. Tippins. (McQueen).

A MEALYBUG (Pseudococcus obscurus) - CALIFORNIA - Heavy on callalily bulb nursery stock in retail sales establishment in Redding, Shasta County. (Cal. Coop. Rpt.).

A PSYLLID (Psylla uncatoides) - CALIFORNIA - Adults heavy on shrubs in Burlingame, San Mateo County; heavy on window sills and invading residence. Normally does not invade dwellings; widespread and serious pest of albizia and acacia. (Cal. Coop. Rpt.).

A PRIVET BUD MITE (Aculus ligustri) - FLORIDA - Heavy on leaves of 50 Ligustrum sinense plants of 100 inspected in Tampa, Hillsborough County. Leaf drop moderate to heavy. (Hale).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - Extremely heavy infestations continue in ALABAMA, MISSISSIPPI, NORTH CAROLINA and TENNESSEE. Populations in GEORGIA, LOUISIANA, SOUTH CAROLINA, TEXAS and VIRGINIA, while still active, decreased to some extent. Controls being carried out in all known infested areas by salvage supplemented by chemical methods. (South. For. Pest. Rptr., Feb.).

BALSAM WOOLLY APHID (Chermes piceae) - Surveys of spruce-fir type in NORTH CAROLINA and TENNESSEE detected several previously unknown infestations on Roan Mountain. (South. For. Pest. Rptr., Feb.).

SEED AND CONE INSECTS - Systematic observations of populations on selected areas in ARKANSAS, LOUISIANA, NORTH CAROLINA and SOUTH CAROLINA indicate populations were relatively low in 1965. Most common insects infesting seeds and cones were Dioryctria sp., Laspeyresia sp. and a coneworm, probably Eucosma sp. (South. For. Pest. Rptr., Feb.).

For Other Forest and Shade Tree Insects, see Federal-State Plant Protection Programs, page 148.

MAN AND ANIMALS

MOSQUITOES - CALIFORNIA - Adults very active during daytime in many areas. In spite of below normal temperatures, overwintering populations became active during days when temperatures ranged 52-65° F. Irritation lower than normal for past year. With present numbers and continued rainfall high potential for large spring and summer populations exists. (Cal. Coop. Rpt.). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control during period February 19-25 contained Aedes sollicitans, Culex salinarius and Culiseta inornata. Light trap collections yielded Anopheles crucians, Culex salinarius and Culiseta inornata. Adult activity very low throughout parish. (Stokes). FLORIDA - Aedes spp. larvae taken in woodland pool at Gainesville, Alachua County. Not developed beyond second instar. Several other woodland pools and ditchwater sampled with negative results. Conditions seem right for increase in mosquito breeding. (Mead).

CATTLE GRUBS (Hypoderma spp.) - UTAH - Treatment applied to approximately 5,000 cattle for control of Hypoderma spp. in Sevier County since December 1965. (Rickenbach, Knowlton). MISSOURI - Grubs light in backs of cattle in northeastern area; ranged 0-12 and averaged about 1 per head. (Houser). ALABAMA - Maturing larvae of H. lineatum present in backs of cattle in central area. Some have cut holes through hide, emerged and ready for pupation. (Lee, Meadows, et al.).

CATTLE LICE - UTAH - Controls applied to approximately 20,000 cattle in Sevier County since December 1965. (Rickenbach, Knowlton). VIRGINIA - Linognathus vituli found on faces of dairy calves in Fluvanna County. (Isakson, Watts, Feb. 18). NORTH CAROLINA - Several species ranged light to moderate on 5 of 7 small groups of dairy and beef animals examined in Vance County. (Bowden, Mount). ALABAMA - Bovicola bovis light in widely scattered cattle herds in Covington County. (Pike).

HOUSEHOLDS AND STRUCTURES

BOXELDER BUG (Leptocoris trivittatus) - MISSOURI - Active in homes on warm days in central district. (Houser).

COCKROACHES - ALABAMA - Blattella germanica and Periplaneta americana reported in 3 homes in Opelika-Auburn area, Lee County. Indications are that enormous numbers present in all parts of these homes. Controls somewhat difficult. (Lee, Turner, et al.).

CLOVER MITE (Bryobia praetiosa) - ALASKA - Observed on window panes of houses at Kodiak Naval Station, Kodiak Island, February 10. (Gillespie).

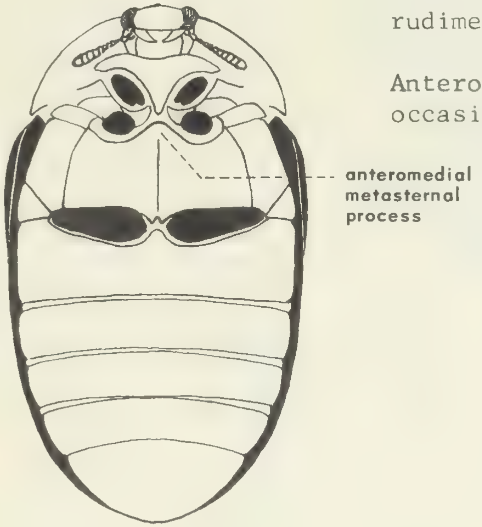
POWDER-POST BEETLES (Lyctus spp.) - CALIFORNIA - Adults of L. caricollis medium in Philippine-mahogany paneling in Salinas, Monterey County. (N. F. McCalley). Adults of L. brunneus heavy in oak flooring in Mill Valley, Marin County. (Cal. Coop. Rpt.).

STORED PRODUCTS

GREEN PEACH APHID (Myzus persicae) - NEW YORK - Found breeding on sprouts of potatoes stored in home cellar at Orient, Long Island, by R. Latham. Sprouts about 2 inches long. All stages present. Potatoes dug in October 1965; vines had been dead for some time. (Leonard).

A SUPPLEMENTAL CHARACTER FOR SEPARATING ADULT TROGODERMA GRANARIUM EVERTS, KHAPRA BEETLE, FROM OTHER NEARCTIC TROGODERMA SPECIES

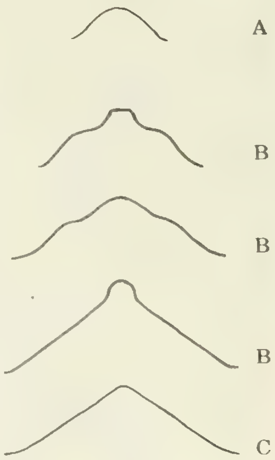
by
George T. Okumura
Bureau of Entomology
California Department of Agriculture, Sacramento, California



Trogoderma granarium ♀ (ventral view)

Anteromedial metasternal process rounded (A) (rarely rudimentary nipple present)...Trogoderma granarium Everts

Anteromedial metasternal process with nipple (B) or occasionally pyramidal (C)....Trogoderma angustum (Solier)
Trogoderma anthrenoides (Sharp)
Trogoderma ballfinchae Beal
Trogoderma fasciferum Blatchley
Trogoderma glabrum (Herbst)
Trogoderma grassmani Beal
Trogoderma inclusum LeConte
Trogoderma okumurai Beal
Trogoderma ornatum (Say)
Trogoderma parabile Beal
Trogoderma paralia Beal
Trogoderma primum (Jayne)
Trogoderma simplex Jayne
Trogoderma sinistrum Fall
Trogoderma sternale Jayne
Trogoderma teukton Beal



Of the foreign species only Trogoderma versicolor (Creutzer), T. boganense Armstrong, T. irroratum Reitter were available for examination. All have nipples.

The assistance of Dr. John M. Kingsolver, Entomology Research Division, A.R.S., U.S.D.A., is gratefully acknowledged. This investigation was supported in part by Stored-Product Insects Research Branch, Market Quality Research Division, A.R.S., U.S.D.A. , Cooperative Agreement No. 12-14-100-8389(51).

BROWN-TAIL MOTH (*Nygmia phaeorrhoea*) - NEW HAMPSHIRE - Approximately 150 winter webs found in apple tree at Canterbury; additional infestation found at Mont Vernon at site infested in 1964. Site negative in 1965. (PPC East. Reg., Jan. Rpt.).

CITRUS BLACKFLY (*Aleurocanthus woglumi*) - MEXICO - *Biological Control Zone* - Inspections of 5,828 trees on 4 properties in Municipios of Guemez, Hidalgo and Padilla, Tamaulipas, revealed 319 lightly infested trees. Property 11 km. north of Hidalgo is northernmost known infestation in northeastern Mexico. Total of 100,200 specimens of *Prospaltella opulenta* (a eulophid) collected in grove to be sprayed. Parasite releases needed on 45 properties in States of Aguascalientes, Campeche, Chiapas, Guanajuato, Guerrero, Tamaulipas, Veracruz and Territorio sur de Baja California; collections possible in States of Colima, Sinaloa and Veracruz. Heavy, new infestation on 20,000 trees between Cuauhtemoc and Comitan, Chiapas; infested trees to be defoliated and leaves burned. *Chemical Control Zone* - Total of 66,972 trees, including 23,800 nursery plants, inspected in States of Nuevo Leon, Tamaulipas, Sonora and Baja California negative. (PPC Mex. Reg., Jan. Rpt.).

CITRUS WHITEFLY (*Dialeurodes citri*) - CALIFORNIA - Survey by grid system disclosed additional 17 city blocks infested in City of Fresno, Fresno County. Treatment in previously known infested area completed; treatment now being applied to new area, about 1.5 miles northwest of treated area. (Cal. Coop. Rpt.).

A FRUIT FLY (*Anastrepha suspensa*) - FLORIDA - Still common in southeast; adults collected in McPhail traps in Palm Beach, Dade and Broward Counties. Larvae more often taken from calamondin than any other fruit, but some taken from fruits of guava, loquat, kumquat and Ceylon-gooseberry (*Dovyalis hebecarpa*) in Dade and Palm Beach Counties. (Fla. Coop. Sur., Feb. 16-18).

GYPSY MOTH (*Porthetria dispar*) - NEW YORK - Infestation of 4 egg masses and numerous pupal cases found in Orleans Township, Jefferson County, about 5 miles northeast of Stone Mills. Five egg masses found at intersection of Clearview Expressway and Union Turnpike in Queens County; one egg mass found there in 1965. PENNSYLVANIA - Egg masses found in 5 of 18 trapsites where males recovered in 1965; scouting completed in 1,000-foot radius at each location. NEW JERSEY - Scouting of positive trapsites revealed following infestations: Stafford and Union Townships, Ocean County; New Shrewsbury Township, Monmouth County; Montague Township, Sussex County; Franklin Township, Somerset County; and Franklin Township, Warren County. Infestation near Manahawkin, Stafford Township, southernmost point species taken in United States. (PPC East. Reg., Jan. Rpt.).

MEXICAN FRUIT FLY (*Anastrepha ludens*) - MEXICO - Inspections of 710 traps on 685 properties in Baja California and 50 traps on 25 properties in Sonora negative. (PPC Mex. Reg., Jan. Rpt.).

WHITE-FRINGED BEETLES (*Graphognathus* spp.) - ALABAMA - Larvae and pupae observed in field of turnips in Covington County. (Pike).

INSECT DETECTION

A TRIGONALID WASP (*Poecilogonalos costalis*) - LOUISIANA - Single female reared from loblolly pine bolt in association with southern pine beetle (*Dendroctonus frontalis*) rearing in Allen Parish. Collected by N. A. Overgaard May 28, 1965. Det. by L. M. Walkley. (Newsom). This is first record for Louisiana. The only known host of *P. costalis* is a noctuid, *Phisophila turbulenta*. (PPC).

AN ARMORED SCALE (*Melanaspis bromeliae*) - HAWAII - Recently found established on pineapples on Oahu and Kauai. This is new State record. (Beardsley). (p. 151).

A CHLOROPID FLY (*Oscinella formosa*) - HAWAII - Specimens collected from coconut flowers in June 1964 determined this species by C. W. Sabrosky. This is new State record. (Hardy). (p. 151).

AN ASTEIID FLY (Loewimyia n. sp.) - HAWAII - Three additional specimens collected on Oahu. (Hardy). Reported for first time from State in CEIR 16(8):125. These are additional locality records. (p. 151).

GRAPE ERINEUM MITE (Eriophyes vitis) - OHIO - Taken on hybrid grape in Hamilton County, July 23, 1965, for new State record. (p. 163).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - KANSAS - Reported as new county record in Sedgwick County in annual summary. (p. 153).

AN ANTHRIBID BEETLE (Araeocorynus cumingi) - HAWAII - Collection of adults confirms establishment on Hawaii Island. This is new island record. (Higa, Shiroma). (p. 151).

A EURYTOMID WASP (Eurytoma latrodecti) - HAWAII - Parasitized 4 egg masses of Latrodectus mactans on Hawaii Island. This is new island record. (Bianchi). (p. 151).

BLACK THREAD SCALE (Ischnaspis longirostris) - HAWAII - Collected from leaves of Prosopis pallida (mesquite) in Puako, Hawaii Island. This is new host and island record. (Davis). (See CEIR 16(8):125).

Look for Fig Wax Scale Now

Look for a large grayish-white scale, about 4.5 mm. long by 3.4 mm. wide, on branches and twigs of fig, including ornamental Ficus. The adult female is globose with a distinct angular form, marked by eight rectangular plates around the body. Star-shaped larvae will be found along veins on upper side of leaves.

Ceroplastes rusci (L.) is a widespread pest of fig in many parts of the world. Also feeds on camellia, hawthorn, holly, citrus, olive and many other plants. This scale is distributed in Lebanon, Libya, Tunisia, Turkey, Syria, Ethiopia, Iraq, Israel, Cyprus, Greece, Egypt, Jordan, Iran; widely distributed in Mediterranean area; also reported from other areas, but records difficult to confirm. It is not known to occur in the United States. Infestations are difficult to control. Damage occurs from deposits of honeydew and subsequent development of sooty molds and from feeding of second and third-stage females on branches. Heavily attacked trees become weakened and unproductive.

For more details see CEIR 10(38):886.

CORRECTIONS

CEIR 16(7):111 - Paragraph 3, line 1 - D. virgifera should read Diabrotica *longicornis*.

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 2/22; blacklight) *Agrotis ipsilon* 2, *Feltia subterranea* 7, *Pseudaletia unipuncta* 4.

GEORGIA (Tifton, 2/16-23; temp. 39-58°F.; precip. 1.25 in.; blacklight) *Heliothis zea* 0, *H. virescens* 0, *Manduca quinquemaculata* 0, *M. sexta* 0.

SOUTH CAROLINA (Charleston, 2/14-20; temp. 34-75°F.; precip. 1.83 in.; blacklight) P. *unipuncta* 1, *Spodoptera frugiperda* 0, *Prodenia ornithogalli* 0, *A. ipsilon* 3, *Feltia subterranea* 4, *Peridroma saucia* 0, *H. zea* 0, *H. virescens* 0, *M. sexta* 0, *M. quinquemaculata* 0, *Estigmene acrea* 0, *Trichoplusia ni* 0. (Charleston, 2/21-27; temp. 38-66°F.; precip. 2.03 in.; blacklight) *P. unipuncta* 0, *S. frugiperda* 0, *P. ornithogalli* 3, *A. ipsilon* 1, *F. subterranea* 5, *P. saucia* 0, *H. zea* 0, *H. virescens* 0, *M. sexta* 0, *M. quinquemaculata* 0, *E. acrea* 0, *T. ni* 0.

TEXAS (Brownsville, 2/19-25; temp. 36-72°F.; precip. 0.44 in.; 2 blacklight) *A. ipsilon* 3, *F. subterranea* 9, *H. zea* 5, *Prodenia ornithogalli* 2, *Pseudaletia unipuncta* 32, *Peridroma saucia* 44.

Change in Scientific Name of *Protoparce*

The following information is presented concerning *Manduca* [1807], *Phlegethontius* [1819] and *Protoparce* (1856). *Manduca*, with its type *M. carolina* Hbn., is the oldest name. Although this has been known for years, it was finally decided by the International Commission on Zoological Nomenclature that Hübner's "Samml. ex. Schmett." [1807] is binomial and in opinion 137, direction 4 (published October 1, 1954), this work was placed on the Official List of Works Approved as Available for Zoological Nomenclature. Until this question was resolved, Federal taxonomists were unwilling to make the change to *Phlegethontius*, an available name, but which, it was justifiably believed, would be replaced eventually by *Manduca*.

William D. Field
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U. S. National Museum

HAWAII INSECT REPORT

Cereal and Forage Insects - A BILLBUG (*Sphenophorus venatus vestitus*) caused considerable damage to Bermuda grass lawns at hotel in Kawaihae, Hawaii Island. This constitutes first record on western side of Hawaii Island. (Bianchi).

Fruit Insects - A SCARAB (*Protaetia fusca*) moderate to heavy on mango flowers in Puako, Hawaii Island. (Yoshioka). COTTONY-CUSHION SCALE (*Icerya purchasi*) very light on citrus trees in Makawao, Maui; scattered on citrus in Honolulu, Hawaii. Larvae of VEDALIA (*Rodolia cardinalis*) observed feeding on scales in Honolulu, Oahu. (Miyahira, Nakao).

Truck Crop Insects - SOUTHERN GREEN STINK BUG (*Nezara viridula* var. *smaragdula*) light in Koloa, Waimea and Lawai, Kauai; nymphs moderate on various weeds and crops in Ewa and Honolulu, Oahu. (Au, Hironaka). MELON FLY (*Dacus cucurbitae*) population low on diversified crops in Kawaihau, Kauai, where most tomato and melon crops grown. (Au).

Forest, Ornamental and Shade Tree Insects - A twig-boring BARK BEETLE (*Xylosandrus compactus*) light on twigs of *Vitex* sp. in Kailua and Kaneohe, Oahu. (Davis). Sporadic outbreaks of SOUTHERN GREEN STINK BUG, mostly nymphs, noted on *Asystasia coromandeliana* in Kailua and Honolulu, Oahu. (Davis). SPOTTED GARDEN SLUG (*Limax maxima*) moderate to heavy among potted wedelia and strawberry plants in Makawao, Maui. (Miyahira). Adults of an ANTHRIBID BEETLE (*Araeocorynus cumingi*) heavy in pods of *Canavalia microcarpa* (Maunaloa) in Manoa, Oahu. Four live specimens found in *Mucuna* sp. seeds in Waiakea, Hawaii Island, by B. Hu and R. Kami confirms establishment of this weevil on Hawaii Island and constitutes first locality record for that island. (Higa, Shiroma).

Insects Affecting Man and Animals - Rainy weather resulted in large populations of a MOSQUITO (*Aedes vexans nocturnus*) on Kauai. Appears well established and widely distributed on north side of island; molesting horses. (Au).

Beneficial Insects - Adults of a CHRYSOMELID BEETLE (*Chrysolina quadrigemina*) and a GALL MIDGE (*Zeuxidiplosis giardi*) observed in good numbers on *Hypericum perforatum* (Klamath-weed) at Mt. Hualalai, elevation 6,800 feet, Hawaii Island. Since no larvae observed, beetles very likely from original release on June 8, 1965. Dry conditions prevailed throughout area. (Yoshioka). New girdling damage to *Lantana* by a CERAMBYCID BEETLE (*Plagiohammus spinipennis*) observed at Hookena, South Kona, Hawaii Island; 2 medium sized larvae noted in one stem. Beetle appears definitely established in this locality. (Yoshioka). A EURYTOMID WASP (*Eurytoma latrodecti*) parasitized 4 egg masses of *Latrodectus mactans* (black widow spider) in Mahukona area, Kohala District, Hawaii Island, January 17, 1966. This is new island record for this parasite. Previously recorded only from Oahu. (Bianchi).

New State of Hawaii Insect Records - AN ARMORED SCALE (*Melanaspis bromeliae*) recently found established on pineapples on Oahu and Kauai. First collected at Davis, California, in late November 1965 on Hawaiian-grown pineapples; det. by R. F. Wilkey. Subsequent examination of pineapple fruits and plants on Oahu, Kauai, Molokai, Maui and Lanai showed small numbers of this scale on fruits and plants on Oahu and Kauai only. (Beardsley).

A CHLOROPID FLY (*Oscinella formosa*) - Specimens collected from cocconut flowers and determined as *Oscinella* sp. in June 1964, now identified by C. W. Sabrosky as *O. formosa*. (Hardy).

An ASTEIID FLY (*Loewimyia* n. sp.) was reported as new to the State in CEIR 16(8): 125. Three additional specimens collected on Oahu; two by C. R. Joyce in Honolulu, November 8, 1965, and January 3, 1966; and one by J. W. Beardsley in Waipio November 24, 1965. (Hardy).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965

(continued from page 140)

FRUIT INSECTS

POME FRUIT INSECTS

Highlights:

EUROPEAN RED MITE was a problem in commercial orchards in most of the Great Lakes States and in North Carolina and western Maryland. Several species of SPIDER MITES were troublesome in the West and Midwest. Several species of Lepidoptera were troublesome in poorly sprayed orchards; especially CODLING MOTH in New Mexico, Kansas, and Indiana, and APPLE-AND-THORN SKELETONIZER in the Pacific Northwest. Aphids were not troublesome, generally, except for WOOLLY APPLE APHID in Alabama. PEAR PSYLLA was troublesome on the West Coast. APPLE MAGGOT caused injury in some areas of the Northeast and Great Lakes States. PLUM CURCULIO caused heavy local damage in Maine.

EUROPEAN RED MITE (Panonychus ulmi) continued to be the number one fruit pest in MICHIGAN and more money is spent controlling this pest than any other arthropod that attacks fruit. The usual pattern of heavy infestations on certain apple varieties, notably Red Delicious, continued. Heavy infestations also occurred on other fruits. Populations were generally 3-4 weeks late in reaching high levels and problems in commercial orchards in the southwest peaked in early August rather than in July. In INDIANA, overwintering P. ulmi hatched at the normal time, when Red Delicious trees were showing pink, but early development was at least 2 weeks slower than normal. Summer populations were below those of the past 4-5 years with highest densities of 60 per leaf in poorly maintained orchards and 1-5 per leaf in better orchards by mid-July. In ILLINOIS, most apple growers obtained good control of European red mite early in the season; however, the long, warm fall allowed a long time for deposit of winter eggs. In OHIO, this mite continued a major pest on apples. Overwintering eggs hatched in early April and first summer eggs were found in mid-May. Economic populations did not build up until after mid-June. During July and August, scattered orchards had highs of over 100 per leaf and bronzing was common. First overwintering eggs were noted in mid-August; populations declined generally in September.

In NORTH CAROLINA, European red mite was the most difficult pest to control in commercial apple orchards in the mountains. In western MARYLAND, European red mite was a serious problem in many commercial apple orchards. Bronzing was evident and spraying was general. P. ulmi caused extensive bronzing of apple leaves throughout NEW JERSEY; but was slightly less abundant on apples in PENNSYLVANIA than in 1964. In MASSACHUSETTS, drought favored an increase of P. ulmi, but severe injury to apple foliage was restricted to a few orchards due to good control measures. In KANSAS, little injury occurred on apples in 1965 since P. ulmi does not normally become a problem.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) was more numerous on apples than in recent years in PENNSYLVANIA. In INDIANA, SPIDER MITES did not approach economic levels until June, and then only in scattered locations. By August 6, populations of 14 per leaf were reported in isolated southern areas and in the northern section of Indiana damaging infestations were much more prevalent. In the fruit-growing areas of southwest MICHIGAN numbers of adults and nymphs remained low until relatively late in the season. In late August, spider mites averaged 8 per leaf on some apple trees in research plots in southwest Michigan, indicating a high population.

Spider mites caused some bronzing of the foliage of apples in most areas of east and central KANSAS, but injury was not as severe as in 1964. Only slight bronzing occurred in northeast Kansas, but mites continued the number one fruit problem in the State. In COLORADO, spider mites were most serious pests to apple and pear growers. Most growers obtained control with normal spraying programs and the estimated loss was one percent or less.

In MARYLAND, spider mites were relatively light in commercial apple orchards in the Hancock area of Washington County. Tetranychus spp. were very widespread and troublesome on apples in ILLINOIS again in 1965. Tetranychus mcdanieli infested apples in San Bernardino County, CALIFORNIA. T. mcdanieli is becoming more damaging to pears in WASHINGTON, probably due to the use of chlorinated hydrocarbons for control of pear psylla (Psylla pyricola). T. mcdanieli populations were out of control on apples in the Wenatchee area, Chelan County, Washington, but were quickly reduced by a 1.7-inch rain on August 23. PEAR RUST MITE (Epitrimerus pyri) infested pears in El Dorado and Solano Counties, CALIFORNIA. In OREGON, E. pyri, T. urticae and YELLOW SPIDER MITE (Eotetranychus carpini borealis) were noted moving into developing pear buds in Jackson County March 13.

PEACH SILVER MITE (Aculus cornutus) populations in COLORADO were at a low level and were controlled with normal spray programs. PEAR LEAF BLISTER MITE (Eriophyes pyri) was light in all orchards in COLORADO where they were found and no significant loss occurred. In CALIFORNIA, local infestations of E. pyri occurred in Solano and Humboldt Counties. In WASHINGTON, pear leaf blister mite and pear rust mite were of little consequence because of good control programs.

CODLING MOTH (Carpocapsa pomonella) infestations in CALIFORNIA were normal in pears and apples. Moderate damage occurred on apples in fruit-growing areas of ARIZONA except where effective, repeated controls were used. Populations were below normal in Arizona during 1965. In NEW MEXICO, codling moth was probably the number one pest damaging apples and pears. Especially serious damage occurred in imporperly and untreated orchards in Lincoln, Santa Fe, Bernalillo, Sandoval and Rio Arriba Counties.

In KANSAS, apples in well sprayed orchards were exceptionally free of codling moth injury. However, apples in unsprayed orchards were 100 percent infested. Adults emerged in the Wathena area of Doniphan County, May 5-10. Large numbers of moths were taken in bait traps in an unsprayed orchard May 24, second generation moths appeared in bait traps June 29 and a partial third generation appeared in August. C. pomonella caused very little loss of commercial apples in INDIANA in 1965. Larvae and "stings" were a problem in orchards where cover sprays were missed or stretched too far. One small apple orchard near Vincennes, Knox County, Indiana, omitted controls and developed a 95-percent infestation. In VIRGINIA, codling moth was well controlled except for a few apple orchards which allowed some late activity between the end of the control program and harvest. Codling moth numbers were heavy in unsprayed apple orchards in most sections of MARYLAND. However, control was excellent in commercial orchards in the Hancock area of Washington County. ORIENTAL FRUIT MOTH (Grapholitha molesta) was well controlled and caused no material injury to apples in VIRGINIA.

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) was not a problem in sprayed or unsprayed apple orchards in MARYLAND. In MICHIGAN, only a few commercial orchards were troubled by red-banded leaf roller during 1965. First-brood larvae caused some leaf injury in a few apple orchards in southwest Michigan and Kent County during late May. Second-brood larvae appeared in southwest area by July 21 but little injury resulted from this brood, although it has caused major problems several times in the past decade. In ILLINOIS, red-banded leaf roller was light in the spring but many orchards had some damage during the season and about 1-2 damaged apples per 100 at harvest. In KANSAS, A. velutinana caused little injury to apples in the Wathena area, Doniphan County, until late September when a few apples showed feeding injury. This species was found for the first time in Sedgwick County, feeding on foliage of young apple trees in two orchards near Wichita.

EASTERN TENT CATERPILLAR (Malacosoma americanum) eggs hatched in Newport, Penobscot County, MAINE, on May 9 and moderate to heavy infestations were found on apple and wild cherry in most areas of the State by late May. Larvae were moving to pupation sites by early June in most areas below Old Town, Penobscot County. Eastern tent caterpillar was more troublesome than usual in commercial orchards in NEW HAMPSHIRE. M. americanum infested apple in MONTANA at Sidney, Richland County; Lewistown, Fergus County; and Bozeman, Gallatin County.

VARIEGATED CUTWORM (Peridroma saucia) damaged apple nursery stock throughout much of WASHINGTON. GREEN FRUITWORM (Lithophane antennata) larvae were common in late May in some eastern MICHIGAN apple orchards. EYE-SPOTTED BUD MOTH (Spilonota ocellana) larvae injured new growth of apples during the latter half of May in several fruit areas of the State, in orchards where there was little or no treatment for insects. APPLE-AND-THORN SKELETONIZER (Anthophila pariana) caused severe damage to untreated apple trees throughout the Willamette Valley of OREGON during July, August and September. A. pariana severely damaged apple and crab apple in southwestern WASHINGTON. Leaf rolling and feeding injury by PALMERWORM (Dichomeris ligulella) larvae was widespread in Kent County, MICHIGAN, apple orchards during late May. YELLOW-NECKED CATERPILLAR (Dantana ministra) was about as troublesome as usual on apples in VIRGINIA and was well controlled. A local infestation of BROWN-TAIL MOTH (Nygmia phaeorrhoea) was eliminated from an apple orchard in Acton, York County, MAINE, in mid-May by a special spray application.

Various species of APHIDS were present in average abundance on apple trees in RHODE ISLAND, but they were no problem in commercial orchards. Aphids were of no significance in well managed apple orchards in MISSOURI. In VIRGINIA, APPLE APHID (Aphis pomi) was normally troublesome well into midseason, but apple growers generally maintained good control to prevent the spread of fire blight. Apple aphid nymphs were first observed on apple in the Madison area of WISCONSIN on May 6 and increased through June into early July. Some treatment was carried out, especially in Door County. In NEBRASKA, moderate to heavy populations caused some damage to apple trees in the southeastern area.

WOOLLY APPLE APHID (Eriosoma lanigerum) was fairly common on apple nursery stock in the mountains of NORTH CAROLINA, but its importance in commercial orchards has not been assessed. In ALABAMA, this species continues to be of major importance in apple orchards. Woolly apple aphid was numerous on 40-year-old Wealthy apple trees in one orchard near Wichita, KANSAS. Control of ROSY APPLE APHID (Dysaphis plantaginea) was generally excellent in sprayed apple orchards in MARYLAND, but one poorly sprayed orchard showed over 50 percent of fruit injured. In VIRGINIA, rosy apple aphid was easily and adequately controlled on apples. Rosy apple aphid was not so numerous in KANSAS as in 1964 and caused less damage to apples. APPLE GRAIN APHID (Rhopalosiphum fitchii) nymphs were noted in Wayne County, OHIO, in early April and populations built up in apple orchards generally, but declined after May. In KANSAS, adults and eggs of R. fitchii were plentiful on apple twigs early in the season.

SAN JOSE SCALE (Aspidiotus perniciosus) was a pest in one apple orchard near Hancock, Washington County, MARYLAND. In ILLINOIS, this pest was observed on fruit in several apple blocks. This species has been the main scale pest in Illinois during the past few years. BLACK SCALE (Saissetia oleae) infested pear trees throughout CALIFORNIA. Biological control is important in controlling this pest in the State.

Oviposition and hatching of PEAR PSYLLA (Psylla pyricola) occurred in early May in RHODE ISLAND. The earliest hatching in MASSACHUSETTS occurred May 5, and some control difficulty was experienced with a certain organic phosphate in 1965. Pear psylla was a fruit pest of lesser importance in OHIO. Pear psylla adults became active in southwest MICHIGAN pear orchards about April 22, and commercial control was generally good. This species was prevalent in many pear-growing areas in northern CALIFORNIA. In OREGON, control continued a problem in all pear-growing areas, with resistance to insecticides increasing in the Willamette Valley. First-generation pear psylla adults appeared in WASHINGTON by mid-May and second-generation adults by early July. Some orchards in Washington had heavy post-harvest populations in October.

APPLE MAGGOT (Rhagoletis pomonella) caused injury in one unsprayed apple orchard near Hancock, Washington County, MARYLAND. In PENNSYLVANIA, this species was a severe problem since egg laying in the northern half of the State was prolonged beyond the normal protection period and maggots appeared in stored apples. Early, heavy adult emergence began June 24 in southern and middle MICHIGAN. Field populations continued in fruit areas until late September although numbers were greatly reduced after mid-August. Control in commercial apple orchards was reasonably good. In WISCONSIN, apple maggot adults began appearing in southern counties in early July, were quite numerous the last 3 weeks of July and common through August to the second week of September. Some first-generation maggots completed development in early apples by July 23.

PLUM CURCULIO (Conotrachelus nenuphar) activity began about June 9 in central MAINE. Heavy damage was noted in Monmouth, Kennebec County, on untreated McIntosh and Golden Delicious apples. In VIRGINIA, plum curculio was adequately controlled on apples and little damage occurred. C. nenuphar was very light on apples in ILLINOIS again in 1965. BROAD-NECKED ROOT BORER (Prionus laticollis) continued to damage two apple orchards in western MASSACHUSETTS, although amount of injury decreased. JAPANESE BEETLE (Popillia japonica) was much less prevalent on apples in VIRGINIA, as has been the case for several seasons. A LEAF BEETLE (Cryptocephalus castaneus) damaged apples in San Luis Obispo County, CALIFORNIA.

LEAFHOPPERS were quite damaging to young apple plantings in VIRGINIA and POTATO LEAFHOPPER (Empoasca fabae) severely infested apple leaves in some orchards in south central PENNSYLVANIA. In VIRGINIA, adequate controls for PLANT BUGS on apples were not generally applied. In MASSACHUSETTS, TARNISHED PLANT BUG (Lygus lineolaris) was unusually abundant early in the season and damaged fruit during and after bloom. Dimpled apples were very noticeable at harvest time. FLOWER THRIPS (Frankliniella tritici) caused less damage to apples in ILLINOIS in 1965; only about 1 percent affected.

EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) continued to increase in abundance in MASSACHUSETTS for the third consecutive year. Slight injury occurred in most orchards in the State, but the most noticeable injury was in orchards where the calyx spray was applied late. H. testudinea was found in NEW HAMPSHIRE for the first time in 1965. European apple sawfly was present in RHODE ISLAND in mid-June, but was not conspicuous generally.

STONE FRUIT INSECTS

Highlights:

Lepidopterous larvae were generally well controlled in commercial orchards throughout the Nation; however, the reduced peach crop in Indiana caused growers to neglect controls and encouraged damage by ORIENTAL FRUIT MOTH. This species also caused considerable injury to young peach trees in Virginia. LESSER PEACH TREE BORER was troublesome in parts of Michigan and Indiana. PLUM CURCULIO was a serious pest of plums in many parts of the South, especially where controls were neglected. Low cherry prices caused growers in Pennsylvania to reduce controls and this led to the highest FRUIT FLY populations in years. MITES were generally troublesome, but growers in most States maintained adequate controls and economic injury was minor. SCALE INSECTS were important pests in Texas and Florida.

The highest ORIENTAL FRUIT MOTH (Grapholitha molesta) population in perhaps 10 years caused considerable injury to terminal growth of young, unsprayed peach trees in VIRGINIA. However, no injury occurred in fruit in bearing orchards. Oriental fruit moth was not a problem in MARYLAND in well sprayed peach orchards. In ALABAMA, oriental fruit moth occurred on peaches and plums throughout the State, but the extent of damage to fruit is questionable. Because of the reduced peach crop in INDIANA, many growers did not finish their spray program and there was a high percentage of "flagging" by oriental fruit moth through much of the 1965 season. This problem is expected to continue during the 1966 season. In MICHIGAN, injury by first-brood G. molesta larvae to terminal growth was relatively low in peach orchards in the southwestern section. A few larvae were found in peaches harvested in late August, but commercial control was generally good in Michigan. In MISSOURI, the first adult oriental fruit moth of the season was found in Cape Girardeau County May 19; and second-brood larvae were found in peach terminals in the southeast and in the Kansas City area about May 26; however, controls were good statewide and fruit was unusually clean. G. molesta caused little injury to peaches and other fruits in KANSAS in 1965 except for some isolated, unsprayed orchards in the Wichita area. The second generation in Kansas started June 4. In COLORADO, the overall population of oriental fruit moth was down from previous years and caused less than 0.5 percent loss to standard Elberta peaches. This species infested peaches in varying degrees in northern CALIFORNIA.

CODLING MOTH (Carpocapsa pomonella) populations in CALIFORNIA were normal on apricots and plums. EYE-SPOTTED BUD MOTH (Spilonota ocellana) larvae in MICHIGAN injured new growth of cherries in poorly treated orchards during the latter half of May.

LESSER PEACH TREE BORER (Synanthedon pictipes) caused moderate injury to plums in NORTH DAKOTA at Mandan, Morton County, and Wyndmere, Richland County. In MICHIGAN, general adult emergence of S. pictipes was underway the second week in June and widespread attacks on stone fruits continued. However, the level of infestation in peaches in southwestern Michigan was lower in 1965 than in previous years. Pupae of an undetermined parasitic hymenopteron were collected from S. pictipes larvae in Monroe County June 8. Such parasitism is rarely noted in Michigan. In 1965, lesser peach tree borer was brought back under control in ILLINOIS in most peach blocks after it rapidly increased in 1964. In southwestern INDIANA, lesser peach tree borer is steadily increasing in peach orchards, and populations were larger in 1965 than in many years. Adult emergence began in April in Indiana and continued into October. In VIRGINIA, lesser peach tree borer caused much less injury to peaches than normal and is expected to be of minor importance within a few years due to improved spray recommendations. In FLORIDA, S. pictipes was a serious pest in fall and winter peach orchards where growers neglected controls.

In NEW JERSEY, lesser peach tree borer and PEACH TREE BORER (Sanninoidea exitiosa) were troublesome in home plantings of peach, cherry and plum. In FLORIDA, peach tree borer was a serious pest during fall and winter in peach orchards where controls were neglected. S. exitiosa continues to be well controlled in ILLINOIS and is not observed in many peach blocks. In KANSAS, peach tree borer killed or damaged many trees in one untreated peach orchard near Wathena, Doniphan County, and heavily infested nearly 5 acres of weakened trees near Wichita, Sedgwick County. Sanninoidea spp. were extremely heavy in some peach orchards in the Bernalillo area, Sandoval County, NEW MEXICO. These species were also heavy in peach trees in Valencia, Bernalillo and San Juan Counties.

Peach tree borer and lesser peach tree borer were the most destructive pests of fruit trees in ALABAMA. These same species damaged fruit in MISSOURI, but were of little consequence. Peach tree borer was only a minor problem in ARKANSAS due to modern controls. However, in OKLAHOMA, peach tree borer caused some damage. Lesser peach tree borer damage remained light in KANSAS in 1965. In OHIO, lesser peach tree borer was a fruit pest of lesser importance. PEACH TWIG BORER (Anarsia lineatella) was more numerous in OREGON orchards which did not receive regular treatment.

PEACH TWIG BORER (Anarsia lineatella) adults were noted June 9 in a Jackson County, OREGON, peach orchard, and damage to untreated trees throughout the State was the heaviest since 1959. In CALIFORNIA, peach twig borer caused varying degrees of damage to peaches from mid-State north. Damage occurred from early spring until winter.

FOREST TENT CATERPILLAR (Malacosoma disstria) severely attacked 120 acres of young peach trees in a cleared forest area near Brooksville, Hernando County, FLORIDA, in May. In MICHIGAN, larvae of GREEN FRUITWORM (Lithophane antennata) were common in late May in some cherry orchards in the eastern section. Larvae of a PHYCITID MOTH (Acrobasis tricolorella) were much more numerous on cherries in the northwestern Lower Peninsula of MICHIGAN in late July and early August of 1965 than during recent years. Larvae of this species started spinning hibernacula in mid-August in Michigan. RED-HUMPED CATERPILLAR (Schizura concinna) infested prune trees at several locations in northern CALIFORNIA. ORANGE TORTRIX (Argyrotaenia citrana) damaged peaches in western WASHINGTON.

PLUM CURCULIO (Conotrachelus nenuphar) was again a serious pest of peaches in FLORIDA, but damage was light to moderate where complete spray programs were used. In ALABAMA, production of quality peaches and plums is impossible without proper control of this pest. Two generations of plum curculio developed in the Piedmont and Tidewater areas of VIRGINIA, and some fruit injury occurred on late maturing peach varieties in poorly sprayed orchards. In OHIO, plum curculio occurrences were generally noneconomic although infestations were found in apricot and plum fruit. In ILLINOIS, this weevil was again very light and catfacing was very low on peaches; less than 2 percent of fruit was damaged. In MISSOURI, larvae of C. nenuphar were nearly full grown in plums in the central section by May 20, but, as in 1964, this species caused little damage. Plum curculio was not reported as causing damage in sprayed commercial orchards in KANSAS, but fruit on 2 untreated plum trees south of Wathena, Doniphan County, were heavily infested. In NORTH DAKOTA, moderate plum curculio damage to plum was observed near Fullerton, Dickey County, and Mandan, Morton County.

A new outbreak of BROAD-NECKED ROOT BORER (Prionus laticollis) was recently discovered in eastern MASSACHUSETTS on peach trees. SHOT-HOLE BORER (Scolytus rugulosus) infested stone fruit trees in a few locations in CALIFORNIA. In OREGON, adults of a LEAF BEETLE (Syneta albida) feeding in cherry blossoms were more numerous than in 1964 in the Willamette Valley.

Infestations of BLACK CHERRY FRUIT FLY (Rhagoletis fausta) and CHERRY FRUIT FLY (R. cingulata) were the heaviest in many years in PENNSYLVANIA. Emergence was unusually prolonged and additional sprays were required for protection. However, many growers did not continue spraying because of low prices and lost their cherry crop. Cherry fruit fly was rare at Madison, Dane County, and in Door County, WISCONSIN. R. fausta was somewhat more common but apparently not of economic importance in commercial cherry orchards.

SPIDER MITES (Tetranychus spp.) were reported infesting peaches and plums in southwest MICHIGAN in late August. In KANSAS, spider mites caused some bronzing of peach foliage in most of the east and central sections. Tetranychus spp. and EUROPEAN RED MITE (Panonychus ulmi) populations developed on about half the peach blocks in ILLINOIS, but only a few blocks had severe damage. In MICHIGAN, European red mite was heavy on plums and lesser populations occurred in some peach orchards. P. ulmi was a problem in southeast PENNSYLVANIA on peaches. This species was heavy in some home plantings of peach and plum in MARYLAND and populations on peach in VIRGINIA were higher than normal but caused only minor injury. In CALIFORNIA, light populations of PACIFIC SPIDER MITE (Tetranychus pacificus) infested plums in a few locations and Bryobia rubrioculus infested peach trees in many locations. Tetranychus mcdanieli, other spider mites and rust mites were the worst pests on stone fruits in WASHINGTON.

A WEB-SPINNING SAWFLY (Neurotoma fasciata) damaged peaches in Montague County, TEXAS. Larvae of N. fasciata were taken for the first time in Leon County, FLORIDA, on wild black cherry near Tallahassee. PEAR-SLUG (Caliroa cerasi) damaged plum foliage in the Espanola area of Rio Arriba County, NEW MEXICO, and lighter infestations were found on pear and cherry foliage.

HICKORY PLANT BUG (Neolygus caryae) caused some injury to peaches in the Amherst area of MASSACHUSETTS for the second consecutive year. Plant bugs were above normal on peaches in PENNSYLVANIA. TARNISHED PLANT BUG (Lygus lineolaris) caused less injury to peaches than normal in VIRGINIA, probably due to weather conditions. Tarnished plant bug was plentiful in peach orchards in northeast KANSAS but caused little damage to the light fruit crop.

In Fresno County, CALIFORNIA, RUSTY PLUM APHID (Hysteroneura setariae) infested plums locally and MEALY PLUM APHID (Hyalopterus pruni) occurred on apricots. BLACK CHERRY APHID (Myzus cerasi) was heavy on individual cherry trees in RHODE ISLAND in early June.

SAN JOSE SCALE (Aspidiotus perniciosus) damaged peaches and plums over a wide area of TEXAS, and heavy, local populations of WHITE PEACH SCALE (Pseudaulacaspis pentagona) in Jefferson and Hardin Counties damaged peach orchards and home plantings. White peach scale was the most important insect on peaches in FLORIDA. Large limbs, and even trees, were lost where rigid control measures were not taken. Crawlers were still active in December 1965.

GENERAL DECIDUOUS FRUIT INSECTS

Overwintering EUROPEAN RED MITE (Panonychus ulmi) eggs began hatching in MAINE May 9-12 and summer eggs were found June 8. Development was about normal, but numbers, particularly of eggs, were higher than average. Summer eggs hatched about June 17 and the third generation was evident by mid-July. Cooler temperatures slowed development of the fourth generation and overwintering eggs were noted about the third week of Aguust. In VERMONT, heavy infestations of P. ulmi occurred in orchards. European red mite built up in the Champlain Valley of NEW YORK during the summer and was the most prevalent fruit pest in the Hudson Valley. The warm, dry spring in DELAWARE caused European red mite to be a problem during late spring and early summer where early season oil sprays were not used. In Delta County, COLORADO, this mite was found in the Hotchkiss area July 19 and in the Paonia and Cedaredge areas later in the season. This was a new State record, and detection was possible because cool weather favored development. P. ulmi has probably been present in the area for a year or two. European red mite was prevalent on decidious fruit trees in CALIFORNIA, primarily in the northern section. In OREGON, early season populations of P. ulmi did not reach the level indicated by egg surveys in March. Later populations were about normal except in a few orchards.

SPIDER MITES (Tetranychus spp.) were generally light over MAINE statewide in early June. No injury was reported in spite of the unusually early date. Populations continued low through mid-June and strong colonies were well established by late June but were kept in check on unsprayed trees by vigorous Panonychus ulmi populations. A very heavy buildup of unspecified spider mites followed the decline of P. ulmi in late July and early August. The most severe spider mite injury in the last decade occurred on untreated check trees in Maine. In MASSACHUSETTS, spider mite numbers increased rapidly in some orchards after European red mite was controlled. Some control measures failed late in the season. In CALIFORNIA, Tetranychus spp. were general pests, but probably not as severe as in most years.

SCHOENE SPIDER MITE (Tetranychus schoenei) and European red mite were the most troublesome pests on fruit in VIRGINIA and controls ranged from adequate to quite unsatisfactory. FOUR-SPOTTED SPIDER MITE (Tetranychus canadensis) was found in orchards in ILLINOIS but did not develop high populations. In NEW MEXICO, heavy populations of SPIDER MITES built up in orchards where frost destroyed the crop and growers did not treat. Where proper controls were used spider mites were of minor importance.

MITES were not a problem in MISSORUI due to frequent heavy rains and good orchard management. Mite populations and damage to fruit trees in OREGON appeared to be slightly less than last year in treated orchards.

CODLING MOTH (Carpocapsa pomonella) populations and damage were about normal in WASHINGTON and OREGON where good controls were used. Pupation occurred in mid-March in Yakima County, Washington, and first moths were trapped in late April. In Oregon, adults emerged April 27 in Jackson County and May 9 in Umatilla County. Unsprayed trees in Oregon were heavily infested. In COLORADO, lower numbers of C. pomonella were taken in bait traps compared with previous years, and the estimated loss ranged 1-3 percent.

In MISSOURI, fruit was unusually clean throughout the State, and significant codling moth damage occurred only on unsprayed trees and in poorly managed orchards. First codling moth entries of the season were reported May 19 in central and southeastern Missouri and a heavy larval infestation occurred in the central area May 24. In ILLINOIS, codling moth emergence was rapid during the first brood, which was well controlled during early season. However, many growers discovered numerous new entries shortly before or during harvest. Adult codling moths appeared in WISCONSIN blacklight traps May 21 and larval "stings" were noticed the second week of June. Second-brood adults appeared in Door County, Wisconsin, in mid-August and adults were present in the State until mid-September. In MICHIGAN, general emergence of spring-brood adults in cages in southwest and in Kent County began by May 28. Second-brood emergence started July 12 in St. Joseph County. Second-brood emergence in cages in Kent County occurred during late July and early August because of cool weather. Good spray programs kept commercial problems low. First adults of the season in OHIO emerged May 12 in Wayne County and peak emergence occurred during late May. Few economic infestations were noted.

Codling moth increased slightly on young trees in southeastern PENNSYLVANIA. C. pomonella caused considerable injury to fruit in home gardens in NEW JERSEY, but not in well managed orchards. Codling moth injury was noticeable in many orchards in NEW YORK, but damage was insignificant. Codling moth was not a problem in MASSACHUSETTS in 1965 due to low numbers. In MAINE, bait traps indicated first-brood adult flights from June 25 to August 2 and small second-brood flights August 23-30. First larval activity in Maine was reported from Auburn, Androscoggin County, June 20.

EYE-SPOTTED BUD MOTH (Spilonota ocellana) caused heavy damage to leaves of unsprayed fruit trees in the Willamette Valley of OREGON in late March. In WASHINGTON, ORIENTAL FRUIT MOTH (Grapholitha molesta) was more numerous in orchards which did not receive regular treatment. In ARKANSAS, oriental fruit moth was a very minor pest in 1965. G. molesta was well controlled in ILLINOIS and only a few orchards had as much as one percent fruit damage at harvest.

Substantial populations of GREEN FRUITWORM (Lithophane antennata) were observed in the Monmouth area of Kennebec County, MAINE, on May 12, and appreciable injury to foliage and buds occurred. EASTERN TENT CATERPILLAR (Malacosoma americanum) was more troublesome than usual in orchard areas of NEW HAMPSHIRE, but was of lesser importance in OHIO. Eastern tent caterpillar was again widely distributed on various fruit trees in central area of TEXAS. WESTERN TENT CATERPILLAR (Malacosoma pluviale) larvae appeared in the Willamette Valley of OREGON on March 13. Infestations were heavy in some localities of Multnomah, Washington and Yamhill Counties but averaged lighter than in 1964 over the valley.

Low populations of RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) occurred in scattered locations in southern and central MAINE; however, no damage was reported. In MASSACHUSETTS, A. velutinana was light for the third consecutive year. In MISSOURI, red-banded leaf roller and FRUIT-TREE LEAF ROLLER (Archips argyrospilus) were very light, as in 1964. Fruit-tree leaf roller was also very light in ILLINOIS. Adults of red-banded leaf roller and fruit-tree leaf roller were caught in light traps during the summer in NEW MEXICO, but only slight damage occurred on foliage and fruit in Bernalillo and Sandoval Counties. In CALIFORNIA, fruit-tree leaf roller was a pest on deciduous fruits in a few locations.

First PLUM CURCULIO (Conotrachelus nenuphar) adults of the season in MICHIGAN were collected in Livingston County May 11. The usual servere infestations of unsprayed fruit plantings occurred throughout the State. This species was not a problem in well kept commercial orchards in southern INDIANA. In NORTH CAROLINA, plum curculio was very active in the Sand Hills in April. Plum curculio populations in commercial orchards in MARYLAND were below those of 1964 and very little damage was experienced. In MASSACHUSETTS, populations of this weevil were as high or higher than in 1964, but injury to fruit was low; apparently due to good controls. In RHODE ISLAND, adults were noted May 27 and built up slowly to average populations, but caused little trouble in commercial orchards.

PACIFIC FLATHEADED BORER (Chrysobothris mali) damaged deciduous fruit trees in Siskiyou and Riverside Counties, CALIFORNIA. First BROAD-NECKED ROOT BORER (Prionus laticollis) of 1965 in RHODE ISLAND was collected in Kingston, June 21, and additional specimens found frequently into late July.

SAN JOSE SCALE (Aspidiotus perniciosus) was more numerous in WASHINGTON in orchards which did not receive regular treatments. In OREGON, infestations were heavier than usual in fruit trees in Jackson County. San Jose scale infested deciduous fruit trees quite generally in CALIFORNIA. This species damaged fruit trees in the Velarde area, Rio Arriba County, NEW MEXICO, and lighter populations were noted in fruit-growing areas of Santa Fe, Sandoval, Bernalillo and San Juan Counties. In KANSAS, San Jose scale remained light in orchards. Persistent San Jose scale populations which appeared resistant to many currently recommended controls, were reported in a few INDIANA orchards. A. perniciosus was a fruit pest of lesser importance in OHIO. In ALABAMA, however, this species was one of the predominant scale pests of fruit other than pecan. The upsurge of San Jose scale in PENNSYLVANIA lessened in 1965, probably due to increased control activity. A. perniciosus populations appear to be building up in RHODE ISLAND.

OLIVE SCALE (Parlatoria oleae) infested deciduous fruits in CALIFORNIA, primarily in the San Joaquin Valley. WHITE PEACH SCALE (Pseudaulacaspis pentagona) was one of the predominant scale pests in ALABAMA on fruits other than pecan.

Light infestations of APPLE MEALYBUG (Phenacoccus aceris) in MAINE caused light to moderate damage in a few locations. In NEW HAMPSHIRE, apple mealybug is apparently on the increase and troublesome numbers appeared in supposedly well kept orchards. VERMONT also had heavy infestations of P. aceris in orchards.

APPLE APHID (Aphis pomi) showed normal development in MAINE during early season, but numbers were severely curtailed by the extreme drought in mid and late summer. Apple aphid and APPLE GRAIN APHID (Rhopalosiphum fitchii) were light to moderate in COLORADO and were controlled by normal spray programs. Apple grain aphid colonies built up in WISCONSIN early in the season but migrated to grains in May. In OHIO, apple aphid and BLACK CHERRY APHID (Myzus cerasi) were fruit pests of lesser importance in 1965. In NEW YORK, apple aphid was heavy in a few locations in the Champlain Valley and ROSY APPLE APHID (Dysaphis plantaginea) was more abundant than usual in the Hudson Valley. In NEVADA, black cherry aphid, rosy apple aphid, and GREEN PEACH APHID (Myzus persicae) were prevalent on fruit. Rosy apple aphid was a problem in a few orchards in COLORADO early in the season, but the loss was in the one percent range. Green peach aphid was low in COLORADO and no specific sprays were needed for control. Rosy apple aphid was widespread in OHIO during spring and fall; some fall infestations were heavy. Green peach aphid and apple aphid hatched about mid-April in MASSACHUSETTS, but did not build up to damaging numbers during 1965.

Brood V PERIODICAL CICADAS (Magicicada spp.) emerged in OHIO in 1965. The distribution of M. septendecim, M. cassini and M. septendecula was established, and M. septendecim was the most widespread. Emergence began in southeastern Ohio in mid-May and adults were generally present through the end of June. The enormous periodical cicada populations caused extensive injury to fruit trees in Ohio.

TARNISHED PLANT BUG (Lygus lineolaris) adults were numerous by May 12 in the Monmouth area of Kennebec County MAINE. Appreciable populations occurred statewide, but injury was generally light. Orchards in VERMONT had higher L. lineolaris populations than usual. Lygus spp. damaged fruit in MISSOURI, but was of little consequence.

APPLE MAGGOT (Rhagoletis pomonella) populations were generally low in MAINE and damage was negligible. This species was less troublesome than usual in NEW HAMPSHIRE; however, populations were high in VERMONT, especially in abandoned blocks of trees. In MASSACHUSETTS, prolonged drought apparently reduced emergence of apple maggot adults, but damaging numbers still occurred where controls were inadequate. Adults of R. pomonella were present in average abundance in RHODE ISLAND and home grown fruit suffered more than commercial orchards. In NEW JERSEY, this species injured considerable fruit in home gardens, but not in well managed orchards. A few infestations of apple maggot larvae were reported in OHIO, generally from improperly sprayed orchards. R. pomonella populations in MINNESOTA were generally lower than in previous years.

CHERRY FRUIT FLY (Rhagoletis cingulata) adults were common in McPhail trap collections in RHODE ISLAND. Infestations in western NEW YORK increased strongly in 1965. R. cingulata was a fruit pest of lesser importance in OHIO. R. cingulata indifferens was more numerous than previously in WASHINGTON in orchards which did not receive regular treatments. In OREGON, populations of R. cingulata indifferens were normal and control was excellent in commercial orchards.

PEAR-SLUG (Caliroa cerasi) populations were about normal in NEVADA except in Churchill and Lincoln Counties, where damage was above average. A light infestation was found in NORTH DAKOTA near Wyndmere, Richland County.

NUT CROP INSECTS

Highlights:

PECAN NUT CASEBEARER and HICKORY SHUCKWORM were serious pests in many pecan-growing areas. PECAN WEEVIL caused heavy local damage in Texas and Oklahoma and other beetles caused local damage in the South and West. The combined damage of APHIDS and SPIDER MITES defoliated pecan trees in Alabama before the nuts matured.

PECAN NUT CASEBEARER (Acrobasis caryae) was extremely heavy in ALABAMA and inflicted severe damage. In OKLAHOMA, damage from A. caryae was moderate to heavy in most pecan-producing areas from late May to mid-July. Damage from the second generation was light in Oklahoma. In TEXAS, pecan nut casebearer was general throughout pecan-growing areas and damage varied from light to heavy. However, infestations were not as heavy, overall, as in 1964. A. caryae appears to have spread to new areas near Carlsbad, Eddy County, NEW MEXICO. Surveys in northern

Eddy County and Dona Ana County were negative. PECAN LEAF CASEBEARER (Acrobasis juglandis) was light locally in TEXAS on pecans in Guadalupe, Tarrant and Galveston Counties. In GEORGIA, infestations of A. juglandis were light to heavy on pecans.

HICKORY SHUCKWORM (Laspeyresia caryana) was extremely heavy and severely damaging in ALABAMA, and was abundant in most areas of TEXAS with heavy damage in Kimble, Parker and Nueces Counties. In OKLAHOMA, damage by L. caryana was more common than in 1964 and occurred from mid-July to early November. ORIENTAL FRUIT MOTH (Grapholitha molesta) infested almonds in varying degrees in northern CALIFORNIA. In Lane County, OREGON, emergence of FILBERTWORM (Melissopus latiferreanus) began July 5 and lasted 6 weeks. Light trap counts throughout the emergence period were much higher than in 1964, but effective control was not difficult.

FALL WEBWORM (Hyphantria cunea) damaged pecan trees in OKLAHOMA from late June to mid-October. In TEXAS, fall webworm caused light, widespread foliage damage on pecans in the San Marcos-Seguin area of Hays and Guadalupe Counties. Populations on walnut trees in OREGON were much less than in 1964. SALT-MARSH CATERPILLAR (Estigmene acrea) caused heavy local damage to pecan foliage in Glasscock County, TEXAS.

WALNUT CATERPILLAR (Datana integerrima) damaged pecans in Nacogdoches and Hamilton Counties, TEXAS, and also damaged pecan trees in OKLAHOMA from late June to mid-October. RED-HUMPED CATERPILLAR (Schizura concinna) infested walnut trees in several locations in northern CALIFORNIA. An unusual infestation of OBLIQUE-BANDED LEAF ROLLER (Choristoneura rosaceana) in Butte County, CALIFORNIA, did considerable damage to maturing almond fruit. Almonds in northern California were also damaged in varying degrees by PEACH TWIG BORER (Anarsia lineatella).

PECAN WEEVIL (Curculio caryae) infestations were heavy in many areas of OKLAHOMA by mid-September and damage continued until late October. In TEXAS, pecan weevil caused heavy local damage to pecans in the Junction area of Kimble County, but was generally lighter in the northern area. A WEEVIL (Compsus auricephalus) caused heavy local damage to pecan foliage in Glasscock County. A FALSE POWDER-POST BEETLE (Amphicerus cornutus) heavily infested almond trees in Clark County, NEVADA, in July. A LEAF BEETLE (Cryptocephalus castaneus) damaged walnut trees in San Luis Obispo County, CALIFORNIA. TWIG PRUNER (Elaphidionoides villosus) damaged pecans in Williamson County, TEXAS. A MAY BEETLE (Phyllophaga sp.) caused heavy feeding damage to pecan foliage in several areas of GEORGIA.

Heavy populations of BLACK-MARGINED APHID (Monellia costalis) in ARIZONA damaged pecan trees in Yuma, Maricopa and Graham Counties. Black-margined aphid infested pecan trees in Fresno County, CALIFORNIA, and caused some damage in OKLAHOMA. BLACK PECAN APHID (Myzocallis caryaefoliae) infestations on pecans were light to heavy throughout GEORGIA the first half of the season. In ALABAMA, there were serious infestations of black pecan aphid and yellow aphids during 1965. In CALIFORNIA, local infestations of black pecan aphid occurred on pecan trees in Merced County. Black pecan aphid was light to moderate in north central and central TEXAS; however, numbers decreased considerably from 1964. Commercial pecan orchards in Dona Ana County, NEW MEXICO, were treated regularly for black-margined aphid and black pecan aphid. WALNUT APHID (Chromaphis juglandicola) was a considerable pest of walnuts statewide in CALIFORNIA. Monellia sp. was unusually heavy on pecan trees in Monticello area of Jefferson County, FLORIDA.

SPIDER MITES were heavy on pecans in local areas of Brazos County, TEXAS. In ALABAMA, many orchards were defoliated before the nuts matured as a result of heavy damage by spider mites during unseasonably dry periods and aphid damage. In CALIFORNIA, light populations of PACIFIC SPIDER MITE (Tetranychus pacificus) infested almonds in a few locations and a FRUIT-TREE MITE (Bryobia rubrioculus) infested almond trees in many locations.

WALNUT HUSK FLY (Rhagoletis completa) was severe on walnuts in CALIFORNIA and caused moderate damage to English walnuts in Washington County, UTAH. Walnut husk fly infestations in OREGON are still confined to noncommercial walnut trees in eastern and southern areas. The small infestation of Rhagoletis suavis, which was found for the first time in Oregon in 1964, is still present in Hood River County.

GRAPE INSECTS

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) caused heavy damage to grapes in the Las Vages area of Clark County, NEVADA. The species is under eradication in Alameda and Fresno Counties, CALIFORNIA, and was light in San Diego County. GRAPE BERRY MOTH (Paralobesia viteana) caused complete loss of fruit in one vineyard near Troy, Doniphan County, KANSAS, but was not important on grapes in ARKANSAS, OHIO, or in the Rosati area of Phelps County, MISSOURI. In MICHIGAN, grape berry moth larval damage was relatively low in 1965. GRAPE PLUME MOTH (Pterophorus periscelidactylus) was heavy on grape in East Greenwich, RHODE ISLAND, in early June. In CALIFORNIA, CUTWORMS were probably more damaging than in the past few years in vineyards and GRAPE LEAF FOLDER (Desmia funeralis) was a grape pest in a few locations.

GRAPE FLEA BEETLE (Altica chalybea) was numerous on early leaves and buds in one vineyard west of Troy, Doniphan County, KANSAS. In ARIZONA, scattered, heavy populations caused moderate to heavy damage to grapes in Maricopa and Pinal Counties, but controls were generally effective.

Heavy populations of LEAFHOPPERS (Erythroneura spp.) moderately damaged grapes in all grape-producing sections of ARIZONA; however, controls were generally effective. Erythroneura sp. was present and damaging in most grape-growing areas of CALIFORNIA. GRAPE MEALYBUG (Pseudococcus maritimus) was present in grapes in Madera and San Joaquin Counties of California.

A SPIDER MITE (Eotetranychus willamettei) infested grapes in Mendocino and Napa Counties of CALIFORNIA. GRAPE ERINEUM MITE (Eriophyes vitis) was taken on hybrid grape in Hamilton County, OHIO, July 23, 1965, for a new State record.

CRANBERRY AND BLUEBERRY INSECTS

CRANBERRY GIRDLER (Crambus topiarius) moth emergence in MASSACHUSETTS was heavy early in the season with injury appearing in late August. Injury was severe on some bogs. In NEW JERSEY, cranberry girdler was more abundant on bogs than usual, primarily due to prolonged drought. Heavy emergence and flights of CRANBERRY FRUITWORM (Acrobasis vaccinii) occurred in MASSACHUSETTS during June and July. Activity continued well into August and late oviposition caused severe infestation in berries. BLACK-HEADED FIREWORM (Rhopobota naevana) and YELLOW-HEADED FIREWORM (Acleris minuta) infestations in NEW JERSEY were severe, but were confined to limited areas. A LEAF ROLLER MOTH (Sparganothis sulfurana) adults were rather abundant in MASSACHUSETTS from late June to late August and larvae were still feeding and webbing berries during picking season. FALL WEBWORM (Hyphantria cunea) was light to moderate in blueberry plantings in NEW JERSEY during 1965.

BLUEBERRY MAGGOT (Rhagoletis mendax) was more numerous in MASSACHUSETTS than in the last several years and was very active in plantings in the eastern area during July and August. Blueberry maggot infestations were very low statewide in MAINE because drought caused a crop reduction. This species was less troublesome than usual in NEW HAMPSHIRE. Blueberry maggot was light to moderate in blueberry plantings during 1965 in NEW JERSEY.

BLUEBERRY THRIPS (Frankliniella vaccinii) was very heavy and damaging at Sedgwick, Hancock County, MAINE, in late May; light infestations and damage at Jonesboro, Washington County, in early June; and heavy with severe damage at North Ellsworth, Hancock County, in mid-June.

BLUEBERRY BUD MITE (Aceria vaccinii) was unusually abundant on blueberries in NORTH CAROLINA; heaviest infestations in 10-12 years, considerably reduced yields in Pender County. CYCLAMEN MITE (Stenotarsonemus pallidus) suddenly became a problem on cranberry in WASHINGTON, especially in the Grayland area of Grays Harbor County.

CITRUS INSECTS

HIGHLIGHTS:

SCALE INSECTS were troublesome throughout the citrus-producing regions, but controls were generally effective. Several citrus pests reached new record high populations in Florida. CALIFORNIA RED SCALE and CITRUS RUST MITE continued to spread in Arizona and Unaspis citri extended its range southward in Florida. Several species of MITES required controls and ANTS were damaging in local areas of Texas and California. In Arizona, CITRUS THRIPS required continuous controls.

Numerous infestations of CALIFORNIA RED SCALE (Aonidiella aurantii) were detected on citrus and ornamentals in the Phoenix area of Maricopa County, ARIZONA, and eradication treatments were applied. California red scale was found in most citrus-growing areas of CALIFORNIA, but was a pest primarily in southern California. YELLOW SCALE (Aonidiella citrina) was a problem on citrus in Tulare County, California. In FLORIDA, yellow scale reached record high levels from January through March, when 67 percent of the groves were infested and 21 percent had moderate to heavy infestations. PURPLE SCALE (Lepidosaphes beckii) occurred in over 80 percent of the citrus groves in FLORIDA from January through March, but few infestations were heavy. This species exceeded normal abundance in Florida in June and then declined. Purple scale was generally kept in control biologically in Orange County, CALIFORNIA. BLACK SCALE (Saissetia oleae) was above average in FLORIDA with a sharp increase in June which peaked at a record high population in July with moderate to heavy infestations in 60-65 percent of the groves. The populations then decreased to the normal low in autumn and remained normal. In CALIFORNIA, black scale infested citrus trees throughout the State, but biological controls were important in keeping this pest under control. CITRICOLA SCALE (Coccus pseudomagnoliarum) was a pest on citrus locally in San Luis Obispo and Fresno Counties, CALIFORNIA. Very few infestations of BROWN SOFT SCALE (Coccus hesperidum) were found on citrus in California. Brown soft scale was below average in FLORIDA and of little importance. In Cameron County, TEXAS, brown soft scale was moderate to heavy on grapefruit, but not as heavy as in 1964. BARNACLE SCALE (Ceroplastes cirripediformis) was light locally on citrus in Hidalgo County, Texas. In ARIZONA, numerous infestations of COTTONY-CUSHION SCALE (Icerya purchasi) were found on citrus througout the year. In most cases, these increased infestations were effectively controlled by the use of predators.

GLOVER SCALE (Lepidosaphes gloverii) reached record high populations in FLORIDA in February and continued high through June. Populations then declined until another increase in September caused above normal levels through December. CHAFF SCALE (Parlatoria pergandii) reached record high levels in Florida in June, then

declined through the summer and numbers were below normal in the fall. An ARMORED SCALE (Unaspis citri) was reported for the first time in Hillsborough, Polk and St. Lucie Counties, Florida, a southern extension of this pest. Control was difficult and populations continued above normal into the fall. Another ARMORED SCALE (Pinnaspis strachani) was heavier than normal in summer and fall in Florida, but caused little concern.

MEALYBUGS were above normal in FLORIDA in the spring and populations approached record high levels in May and June, but decreased to the normal low level by the end of September. In San Diego, Santa Barbara and Riverside Counties, CALIFORNIA, light populations of CITRUS MEALYBUG (Planococcus citri) occurred on citrus. In April WHITEFLIES decreased to normal populations in FLORIDA for the first time since August 1963. The whitefly population then fluctuated until reaching abnormal highs in December. During March and April CITRUS WHITEFLY (Dialeurodes citri) was very heavy on citrus and other dooryard fruits in Gainesville, Alachua County, Florida.

New infestations of CITRUS RUST MITE (Phyllocoptruta oleivora) were found on lemons in Yuma County, ARIZONA. Although controls have been successful on existing infestations a constant spread has been detected. Citrus rust mite was the most important citrus pest in FLORIDA during late winter and spring. Numbers declined to record low levels by mid-August and then increased to economic levels in the fall. In CALIFORNIA, light populations of citrus rust mite occurred in coastal areas of Santa Barbara and San Diego Counties. Controls were required for CITRUS BUD MITE (Aceria sheldoni) on citrus in San Diego and Santa Barbara Counties, California, and CITRUS FLAT MITE (Brevipalpus lewisi) infested citrus in varying degrees in Riverside, Tulare and Imperial Counties. Medium to heavy infestations of citrus flat mite were a serious problem to many citrus growers in the Yuma area of Yuma County, ARIZONA, for much of 1965. Lighter infestations were found in Maricopa and Pinal Counties.

YUMA SPIDER MITE (Eotetranychus yumensis) was medium to heavy on citrus in Yuma County, ARIZONA, and some controls were necessary. CITRUS RED MITE (Panonychus citri) was not as severe in CALIFORNIA during 1965 as in the past several years; however, this mite is now statewide in California. P. citri was below average in FLORIDA, but important in scattered groves from April through June and reached the normal summer peak in late July. Populations then declined to a record low level. TEXAS CITRUS MITE (Eutetranychus banksi) was moderate in FLORIDA through March and reached a record high level in June and July but declined rapidly to below normal in the fall. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) populations were near normal in FLORIDA and were not important to citrus growers.

PINK SCAVENGER CATERPILLAR (Sathrobrota rileyi) damaged citrus locally in Orange County, and ORANGE TORTRIX (Argyrotaenia citrana) damaged citrus in many locations over CALIFORNIA. Larvae of a LEAF ROLLER MOTH (Sparganothis sulfurana) damaged citrus locally in Los Angeles and Riverside Counties, California.

Widespread infestations of TEXAS LEAF-CUTTING ANT (Atta texana) stripped leaves from citrus in Hidalgo County, TEXAS. ARGENTINE ANT (Iridomyrmex humilis) was a problem in citrus groves in a few locations in southern CALIFORNIA. Larger than normal populations of CITRUS THRIPS (Scirtothrips citri) required continuous controls on citrus in Yuma, Maricopa and Pinal Counties, ARIZONA. Citrus thrips was more severe on citrus in Tulare County, CALIFORNIA, than in the southern part of that State. BROWN GARDEN SNAIL (Helix aspersa) damaged citrus in Riverside, Orange, Santa Barbara and San Diego Counties, California.

AVOCADO INSECTS

In CALIFORNIA, AVOCADO BROWN MITE (Oligonychus punicae) was a local problem on avocado in Santa Barbara County, and larvae of a LEAF ROLLER MOTH (Sparganothis sulfurana) damaged avocados locally in Los Angeles and Riverside Counties.

GREENHOUSE THRIPS (Heliothrips haemorrhoidalis) on avocados in Santa Barbara County, California, was mostly held in check by biological controls.

Weather continued from page 142.

STORMS: The week began with a series of small disturbances preceding the leading edge of an Arctic air mass. On Monday, up to 7 inches of snow fell in Oklahoma, Missouri, and Arkansas, and flurries occurred in the Ohio Valley. A new system started to develop in south central Texas on Tuesday. Heavy snow, freezing rain, and sleet coated the area bounded by Dallas, San Angelo, and San Antonio. A foot of snow was reported in the Austin area before the worst storm in southwest Texas in 17 years moved into Arkansas and Tennessee.

All week the system continued to strengthen as it traveled northeastward. It dumped 5-12 inches of snow along the lower Appalachians, but its full fury was not felt until the weekend when the storm reached New England. Gale winds and more than 20 inches of new snow brought transportation to a standstill in Maine. There was one happy note as the above average snow cover caused by the storm greatly improved ski conditions in New York and northern New England. It was the third straight week of heavy precipitation in the Southeast. Rains associated with a stationary front deluged the Florida Peninsula in midweek relieving the water crisis in the drought-stricken Everglades. The rains also delayed space launchings from Cape Kennedy. As the week ended, a Low over New Mexico moved eastward and merged with a Low in the Gulf of Mexico resulting in heavy rains and thunderstorms and lowland flooding over the Gulf States. Once again the Pacific Northwest received relatively little precipitation. Intermittent light rain and showers fell throughout the period, but no significant storms traversed the region. (Summary supplied by U. S. Weather Bureau).

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